

## 8.7 DORCHESTER COUNTY

This chapter presents information about stream conditions of potential management interest in Dorchester County based on the 2000-2004 Maryland Biological Stream Survey (MBSS) results. Information from MBSS data collected between 1994 and 1997 can be found in MDNR 2001j.

### 8.7.1 Ecological Health

Based on the three ecological health indicators used by the MBSS, the overall condition of Dorchester County streams during 2000-2004 was Poor (Figure 8-87). Both the FIBI and BIBI results indicate that 13% of the streams in the county were in Good condition. In contrast, 74% of the streams in the county scored as Poor or Very Poor using the CBI, while only 6% scored as Good and 20% scored as Fair.

Most of the sites with high IBI scores occurred in the northeastern corner of the county, along the Choptank River, while sites rated Very Poor were widely distributed. The highest rated stream in Dorchester County using the Combined Biotic Index (CBI) was Davis Millpond Branch (Table 8-23). In contrast, the lowest rated streams included unnamed tributaries to Mill Branch, the Little Blackwater River, and Gravel Run. Based on Stream Waders volunteer data, most sites in the county rated as Poor or Very Poor for benthic macroinvertebrates (Table 8-24).

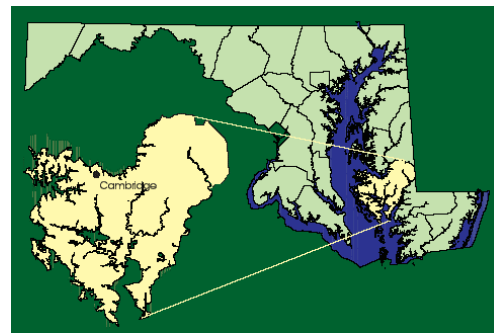
### 8.7.2 Physical Habitat

#### 8.7.2.1 Overall Condition

Based on the Physical Habitat Index (PHI), 14% of the streams in Dorchester County had Minimally Degraded habitat, 59% had Partially Degraded habitat, and 27% had Degraded or Severely Degraded physical habitat (Figure 8-88). There was no apparent pattern in the distribution of higher and lower quality sites within the county.

#### 8.7.2.2 Trash

Nearly 71% of the stream miles in Dorchester County were rated Optimal for trash (Figure 8-89). In contrast, only 10% of streams were rated as being in Marginal or Poor condition. Sites with trash in more than minimal amounts were all located in the northeastern portion of the county.



#### 8.7.2.3 Channelization

About 57% of the stream miles in Dorchester County were channelized (Table 8-4). All of the documented channelization was in the form of earthen ditches. There was no strong pattern in the distribution of ditched streams (Figure 8-90).

#### 8.7.2.4 Inadequate Riparian Buffer

No stream miles in Dorchester County were devoid of riparian buffers during the 2000-2004 MBSS (Table 8-3). However, 10% of stream miles had severe breaks in existing riparian buffers. There was no apparent geographic pattern in the distribution of sites with buffer breaks (Figure 8-91). Additional information about buffer breaks, analyzed by county, is provided in: 2000-2004 Maryland Biological Stream Survey Volume 10: Riparian Zone Conditions ([http://www/dnr/Maryland.gov/streams/pubs/ea05-7\\_riparian.pdf](http://www/dnr/Maryland.gov/streams/pubs/ea05-7_riparian.pdf)).

#### 8.7.2.5 Eroded Banks/Bedload Movement

Over 82% of the stream miles in Dorchester County were rated as having minimal (Optimal) bank erosion (Figure 8-92). In contrast, 8% of stream miles were rated Poor for bank erosion. A likely contributing factor to the low levels of bank erosion in Dorchester County was the amount of channelization by ditching in non-tidal streams in the county. There was no apparent geographic pattern in the distribution of bank erosion problems in the county.

Nearly 19% of the stream miles in Dorchester County had extensive bar formation (Figure 8-92). An additional 37% were rated as having moderate bar formation, and the remaining 44% were rated as having minor bar formation. No stream sampled in the county was devoid of bars. Similar to bank erosion problems, there was no apparent geographic pattern in the distribution of bar formation problems in the county.

### 8.7.3 Key Nutrients

#### 8.7.3.1 Nitrate-Nitrogen

Nearly 34% of the stream miles in Dorchester County had low nitrate-nitrogen levels (Figure 8-93). Of the remaining 65% of stream miles, over 42% had levels above 5 mg/l, the threshold beyond which biological impacts have been documented. High levels of nitrate-nitrogen occurred exclusively in the northeastern part of the county.

#### 8.7.3.2 Total Phosphorus

An estimated 44% of stream miles in Dorchester County had low total phosphorus levels (Figure 8-94). Of the remaining stream miles, 25% had levels above the threshold where biological effects may occur. Sites with high levels of total phosphorus were clustered in the center of the county.

### 8.7.4 Stream and River Biodiversity

To provide a means to prioritize stream systems for biodiversity protection and restoration within each county and on a statewide basis, a tiered watershed and stream reach prioritization method was developed. Special emphasis was placed on state-listed species, stronghold watersheds for state-listed species, and stream reaches with one or more state-listed aquatic fauna. Fauna considered included stream salamanders, freshwater fishes, and freshwater mussels. Rare, pollution-sensitive benthic macroinvertebrates collected during the 1994-2004 MBSS were also used to identify the suite of watersheds necessary to conserve the full array of known stream and river biota in Maryland. A complete description of the biodiversity ranking process is found in: 2000-2004 Maryland Biological Stream Survey Volume 9: Stream and Riverine Biodiversity ([http://www/dnr/Maryland.gov/streams/pubs/ea05-6\\_biodiv.pdf](http://www/dnr/Maryland.gov/streams/pubs/ea05-6_biodiv.pdf)).

Of the four watersheds found in Dorchester County, the Nanticoke River was classified as Tier 2, meaning that this watershed serves as a stronghold for one or more non-state listed species of Greatest Conservation Need (GCN), and also has one or more state-listed aquatic species (Figure 8-95). In contrast, the Honga River/Little Choptank River/Lower Choptank River watershed was the lowest ranking for stream and river biodiversity in the county, and ranked

61<sup>st</sup> of 84 in Maryland. Any reaches that had either state-listed or GCN species, or high intactness values were highlighted to facilitate additional emphasis in planning restoration and protection activities.

### 8.7.5 Stressors

At 75% of stream miles, the most extensive stressor characterized by the MBSS in Dorchester County during the 2000-2004 MBSS was non-native terrestrial plants in the riparian zone (Figure 8-5). Other stressors found extensively were: channelized streams (57% of stream miles); non-native aquatic fauna (present in 47% of stream miles); high nitrate-nitrogen levels (42% of stream miles); low dissolved oxygen (26% of stream miles); acid deposition (observed in 30% of stream miles); eroded banks (16% of stream miles); and streams with >5% urban land use (7% of stream miles).

#### AN IMPORTANT NOTE ON BIODIVERSITY MANAGEMENT

Perhaps the largest ongoing natural resources restoration and protection effort in Maryland is associated with the Chesapeake Bay. In most cases, freshwater biodiversity is not specifically considered during placement and prioritization of Bay restoration and protection projects. In this report and in the more detailed volume in the series on aquatic biodiversity, a system of biodiversity ranking is presented to provide counties and other stewards with a means to plan appropriate protection and restoration activities in locations where they would most benefit stream and river species. Given the historically low level of funding for biodiversity protection and restoration in Maryland and elsewhere, the potential benefit of incorporating freshwater biodiversity needs into other efforts is quite large.

However, it is important to note that although freshwater taxa are the most imperiled group of organisms in Maryland, other groups and individual species not typically found in freshwater habitats are also at high risk and constitute high priority targets for conservation. In addition, freshwater taxa that prefer habitats such as small wetlands may not be well-characterized by the ranking system employed here. To conserve the full array of Maryland's flora and fauna, it is clearly necessary to use other, landscape-based tools and consider factors such as maintaining or reconnecting terrestrial travel corridors.



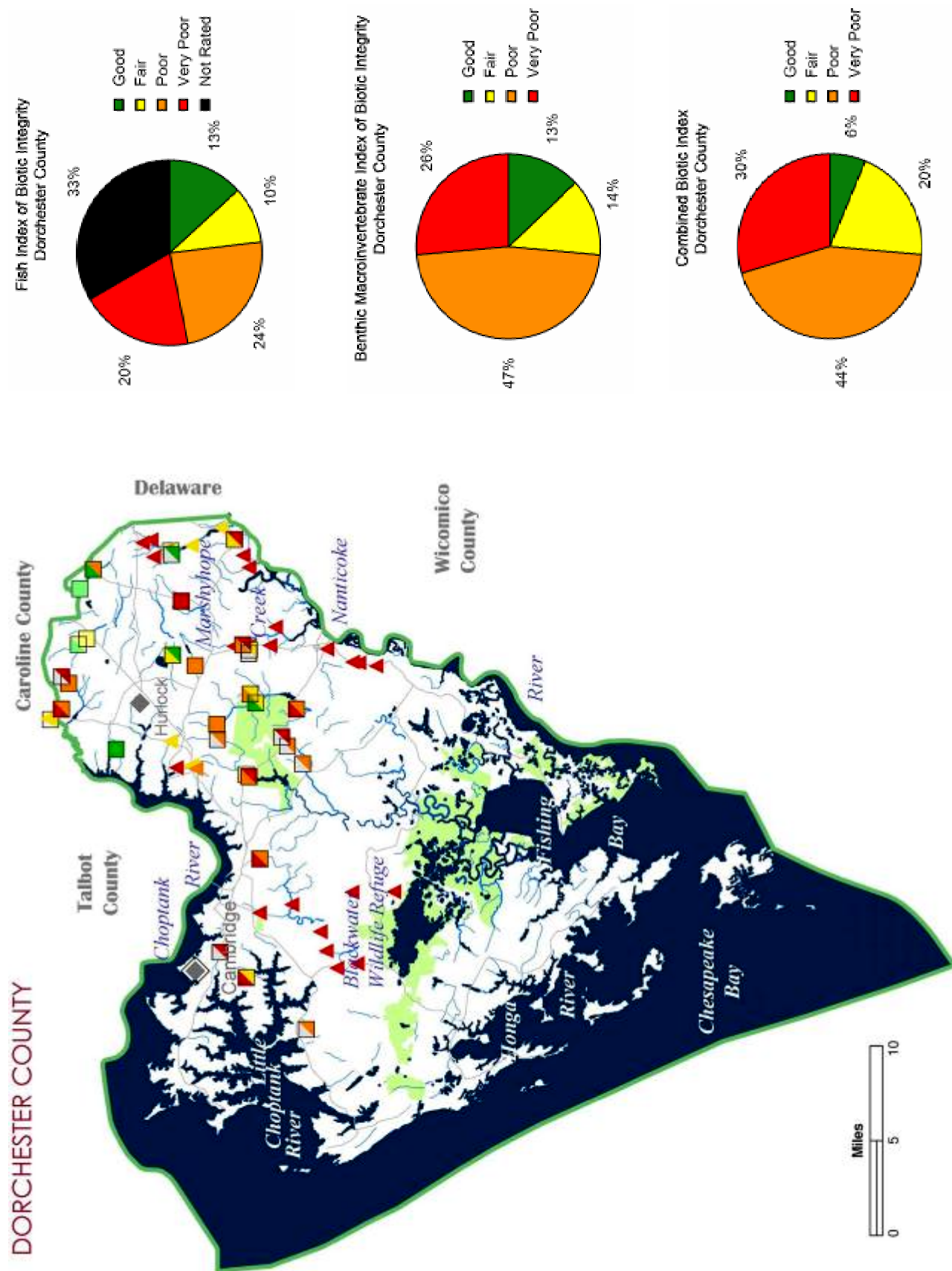


Figure 8-87. Benthic Index of Biotic Integrity (BIBI) and Fish Index of Biotic Integrity (FIBI) pie charts and map of stream health for Dorchester County streams sampled by the MBSS during 1995-97 and 2000-2004 (pie charts represent 2000-2004 data only, Combined Biotic Index pie chart represents mean of FIBI and BIBI)



Table 8-24. Stream Waders sites sampled in  
Dorchester County during 2000-2004,  
ranked by Family-level Benthic Index of  
Biotic Integrity

Dorchester County - Stream Wader Sites				
WATERSHED	# GOOD	# FAIR	# POOR	# VERY POOR
Fishing Bay	0	0	0	8
Choptank Lower	0	3	1	1
Nanticoke River	0	2	1	13



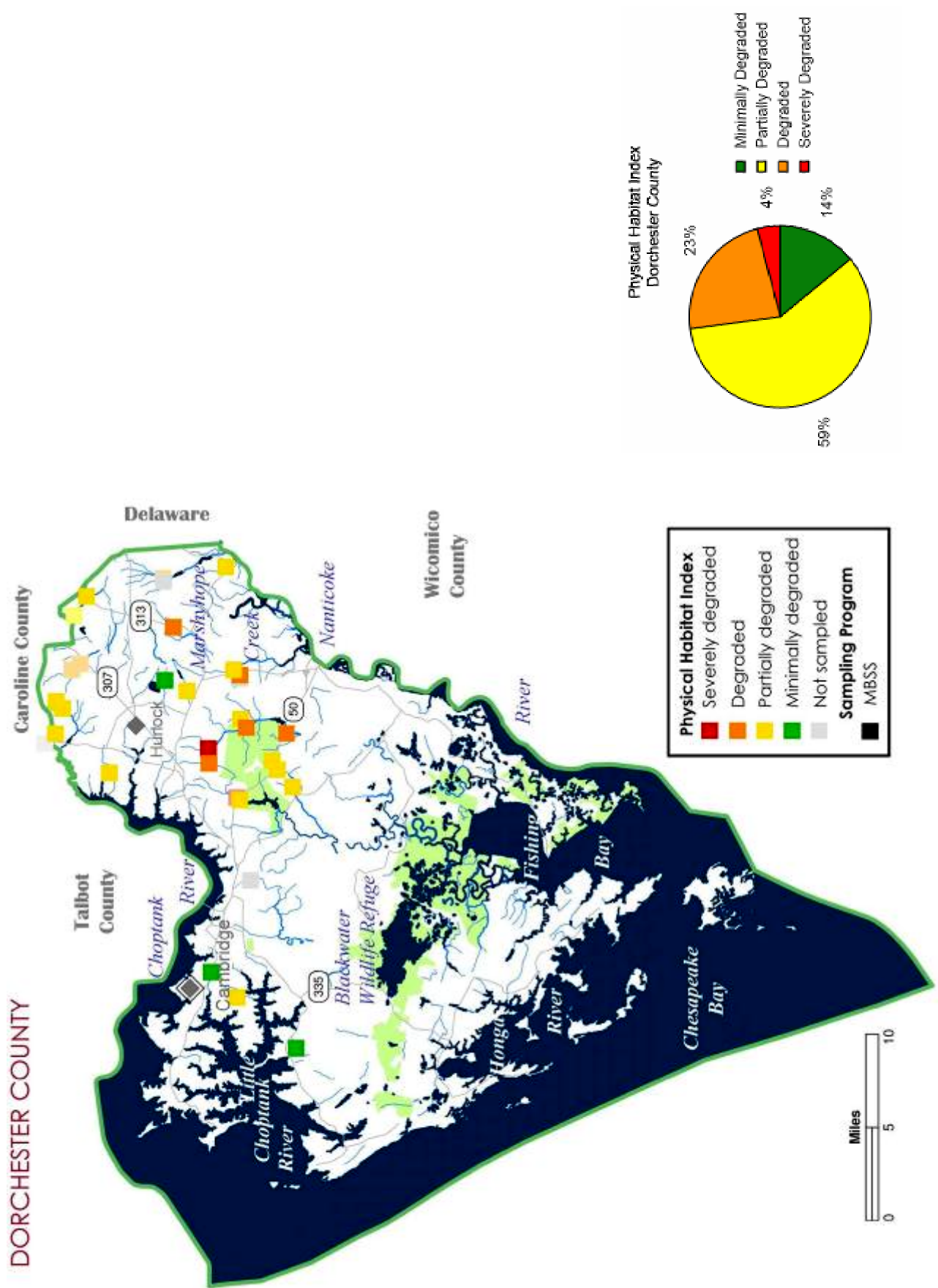


Figure 8-88. Physical Habitat Index (PHI) pie chart and map of stream habitat quality for Dorchester County streams sampled by the MBSS during 1995-97 and 2000-2004 (pie chart represents 2000-2004 data only)

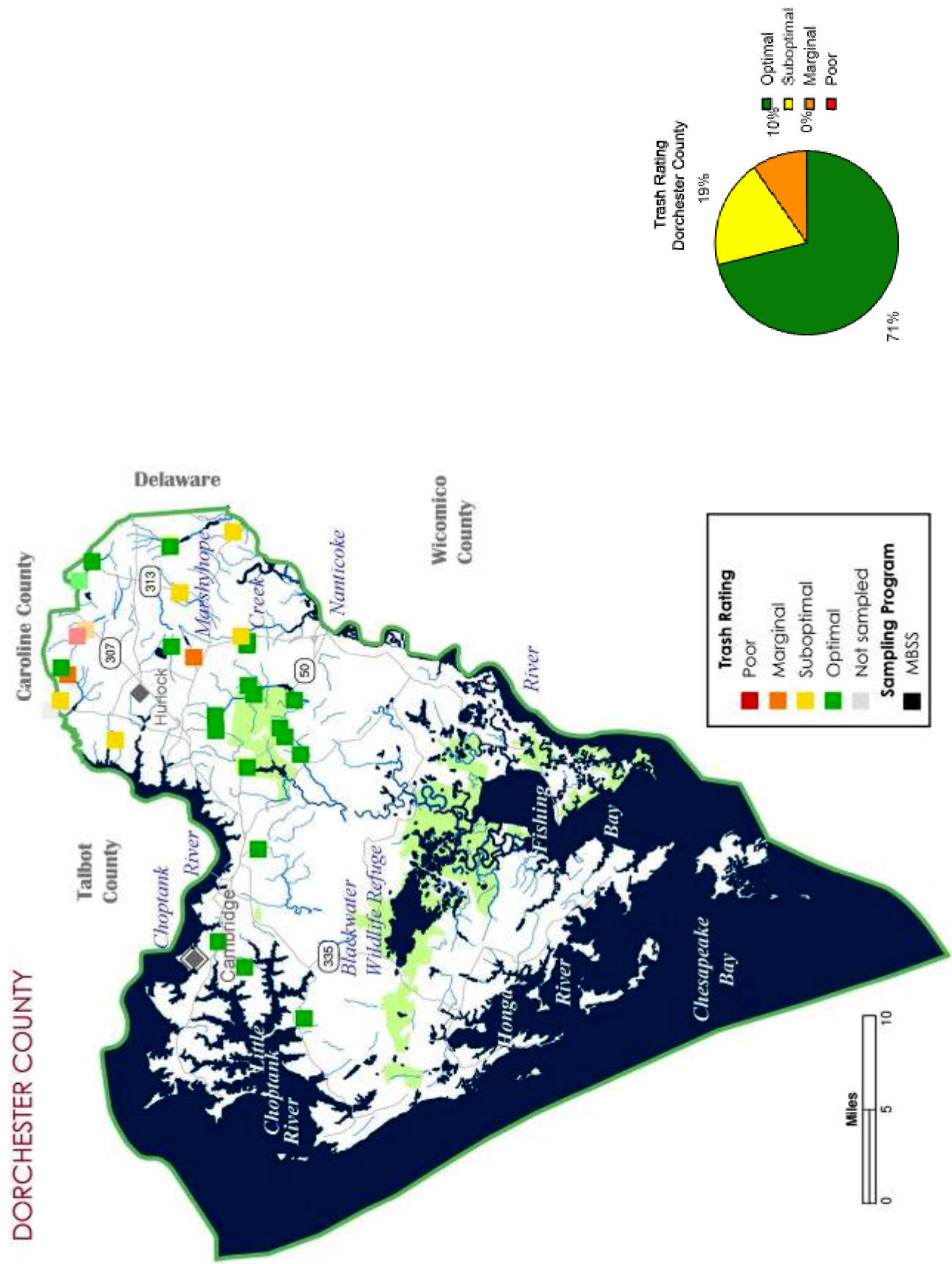


Figure 8-89. Pie chart and map of trash rating (0-20 scale) for Dorchester County streams sampled by the MBSS during 1995-97 and 2000-2004 (pie chart represents 2000-2004 data only)



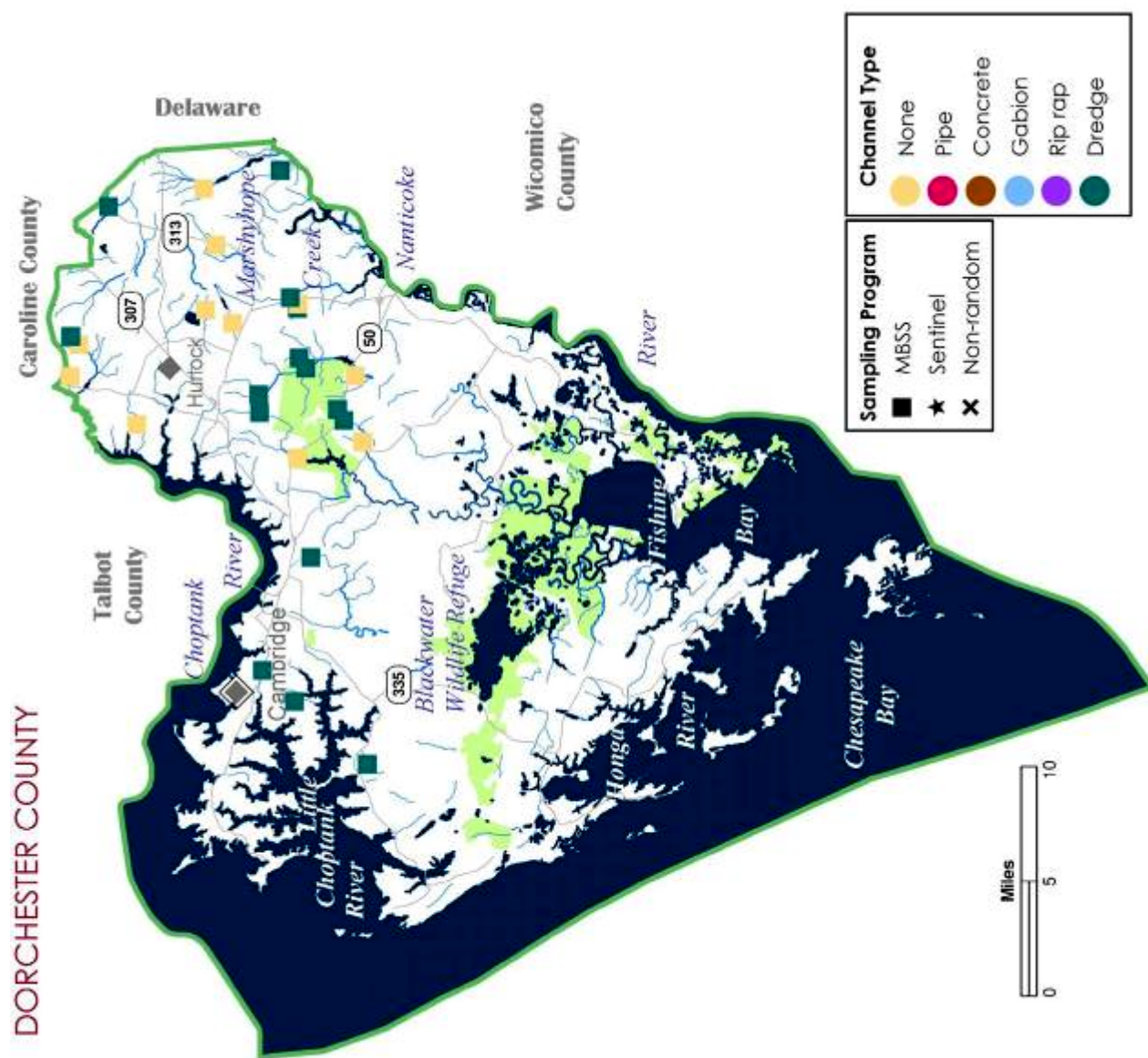


Figure 8-90. Map of channelized sites, by type, for Dorchester County streams sampled by the MBSS during 2000-2004. *NOTE: When channelization is indicated, it does not necessarily mean that the entire 75m segment was affected.*

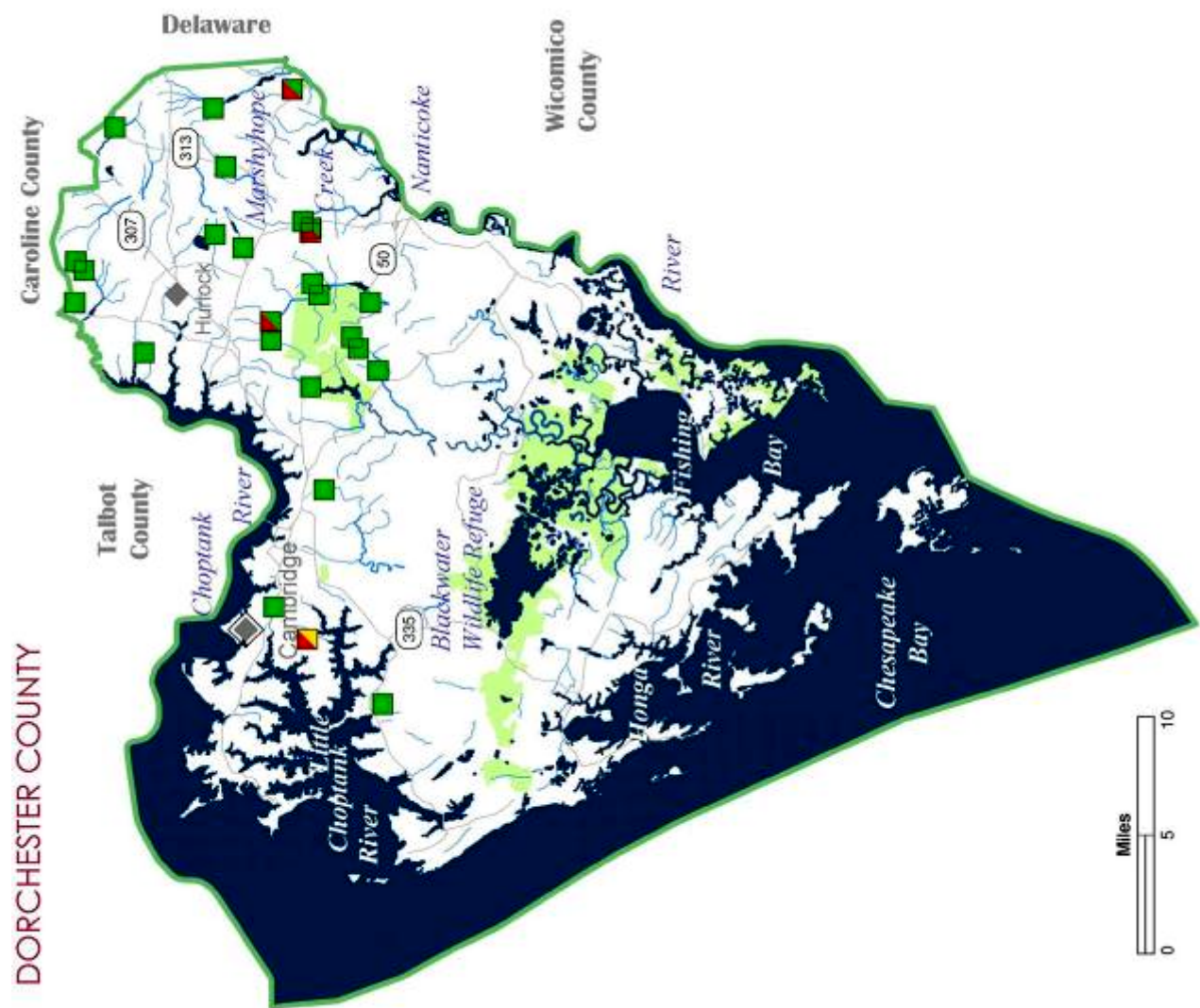


Figure 8-91. Map of sites with inadequate riparian buffers and buffer breaks for Dorchester County streams sampled by the MBSS during 2000-2004. NOTE: Multiple riparian buffer breaks sometimes occurred at a site; only the most severe was depicted.

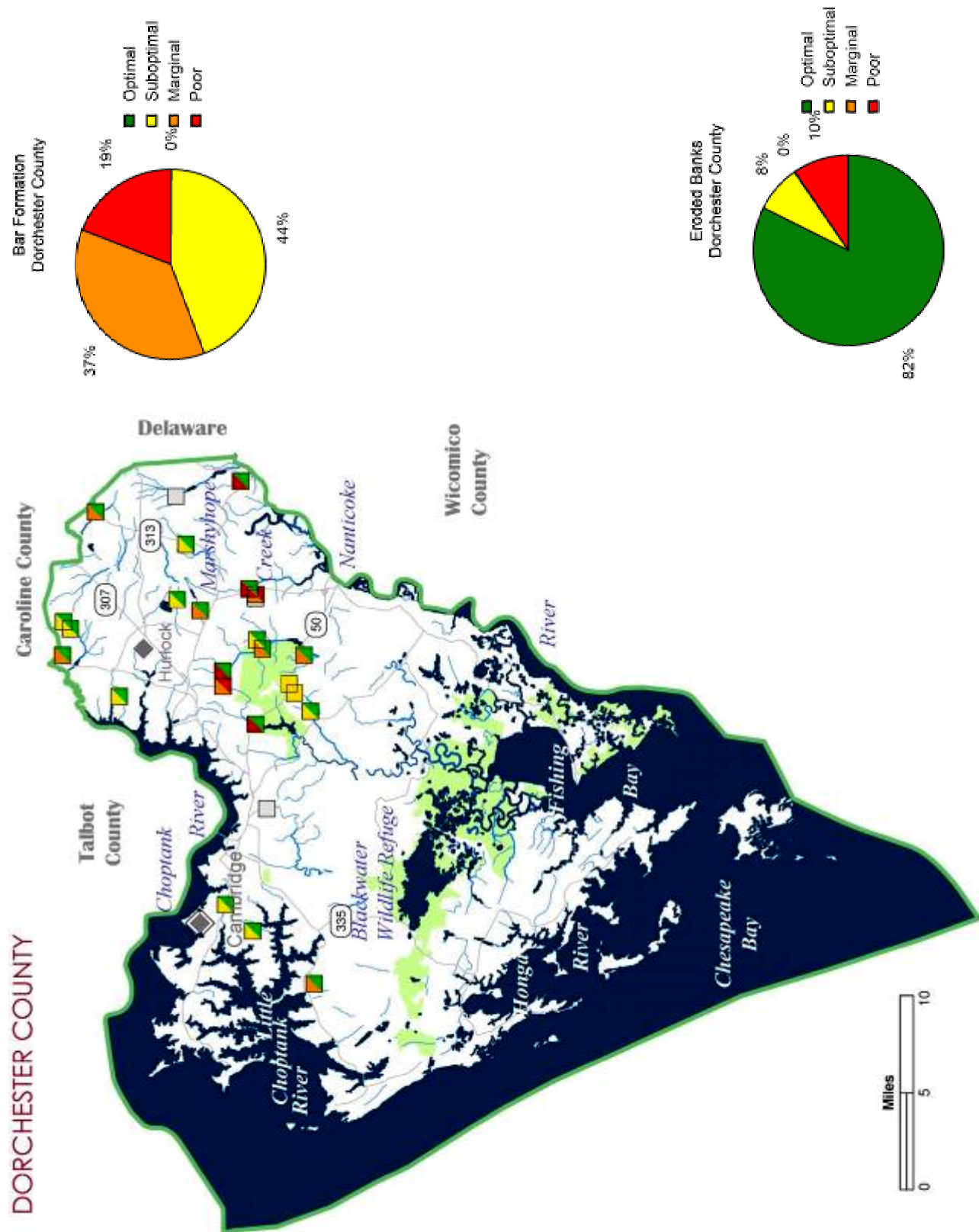


Figure 8-92. Pie charts and map of sites with eroded banks and instream bar formation for Dorchester County streams sampled by the MBSS during 2000-2004



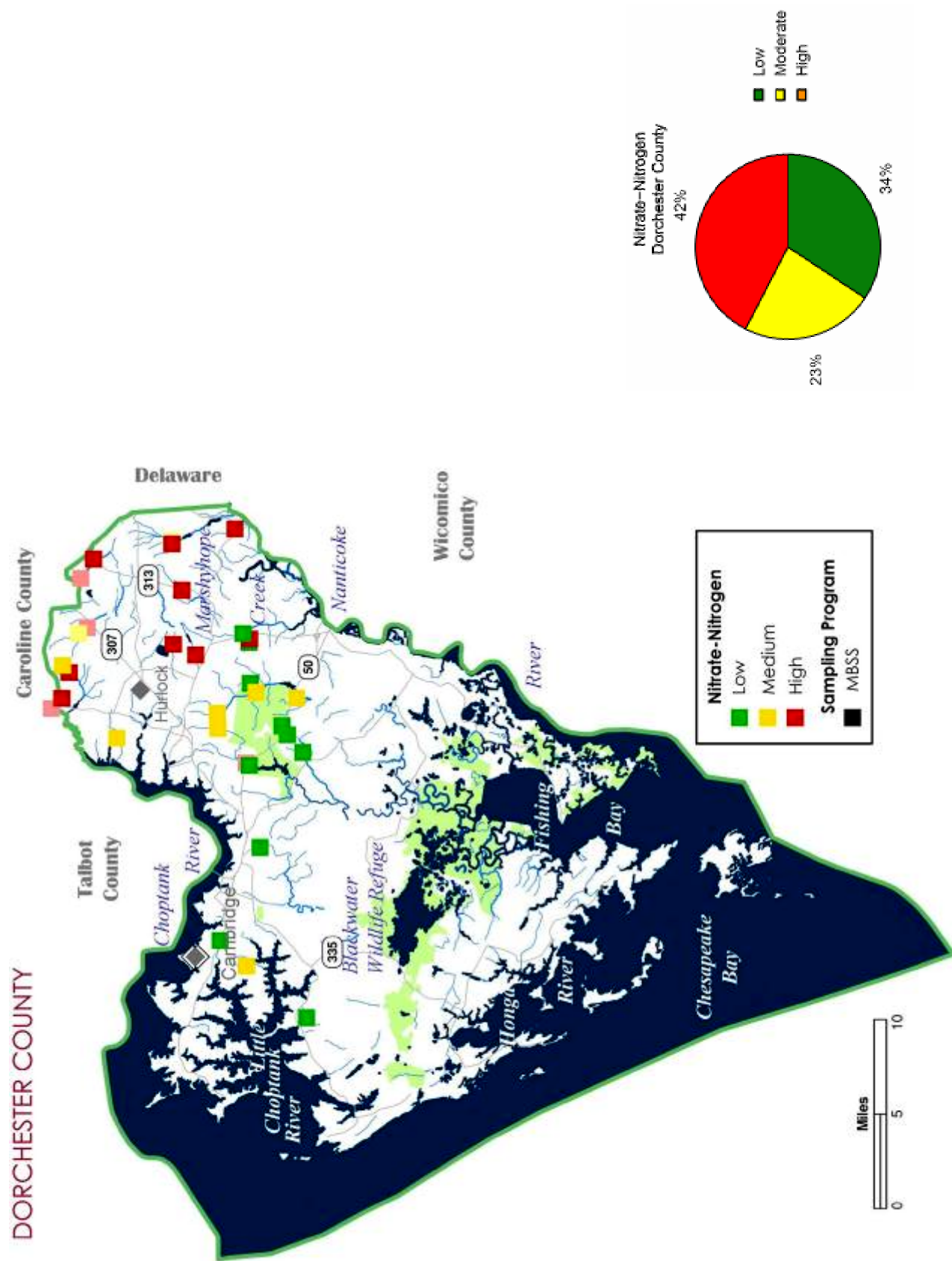
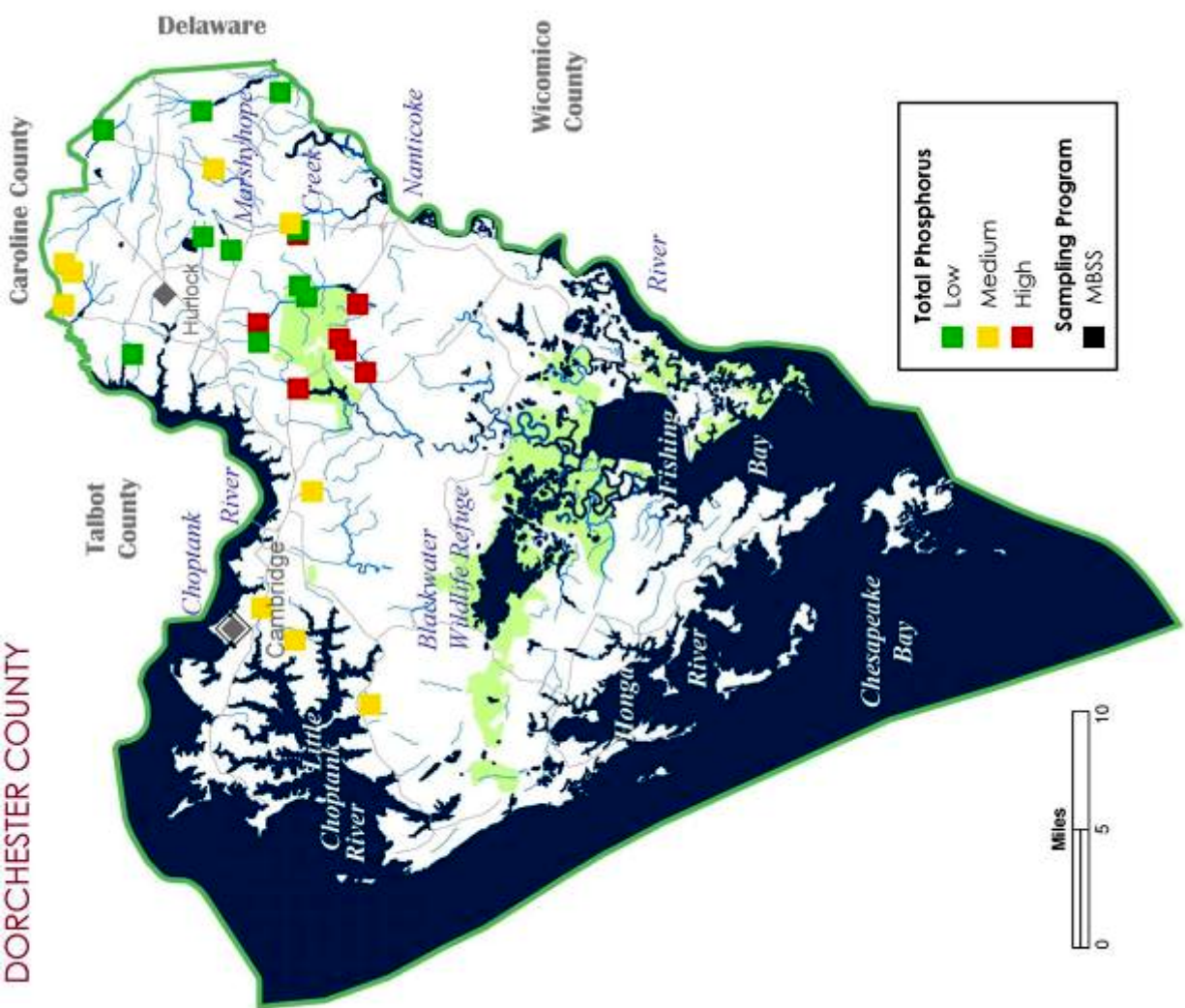


Figure 8-93. Pie chart and map of nitrate-nitrogen values (mg/l) for Dorchester County streams sampled by the MBSS during 1995-97 and 2000-2004 (pie chart represents 2000-2004 data only) (Low = 1.0, Medium = 1.0 – 5.0, High = > 5.0)

# DORCHESTER COUNTY



Total Phosphorus  
Dorchester County

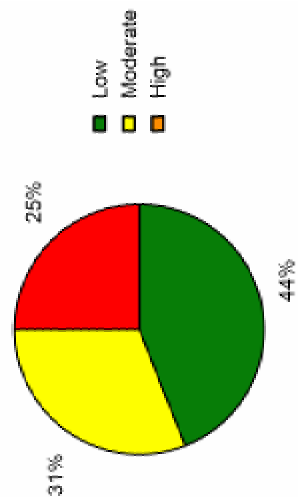


Figure 8-94. Pie chart and map of total phosphorus values (mg/l) for Dorchester County streams sampled by the MBSS during 2000-2004 (Low = < 0.025, Medium = 0.025 – 0.07, High = > 0.07)



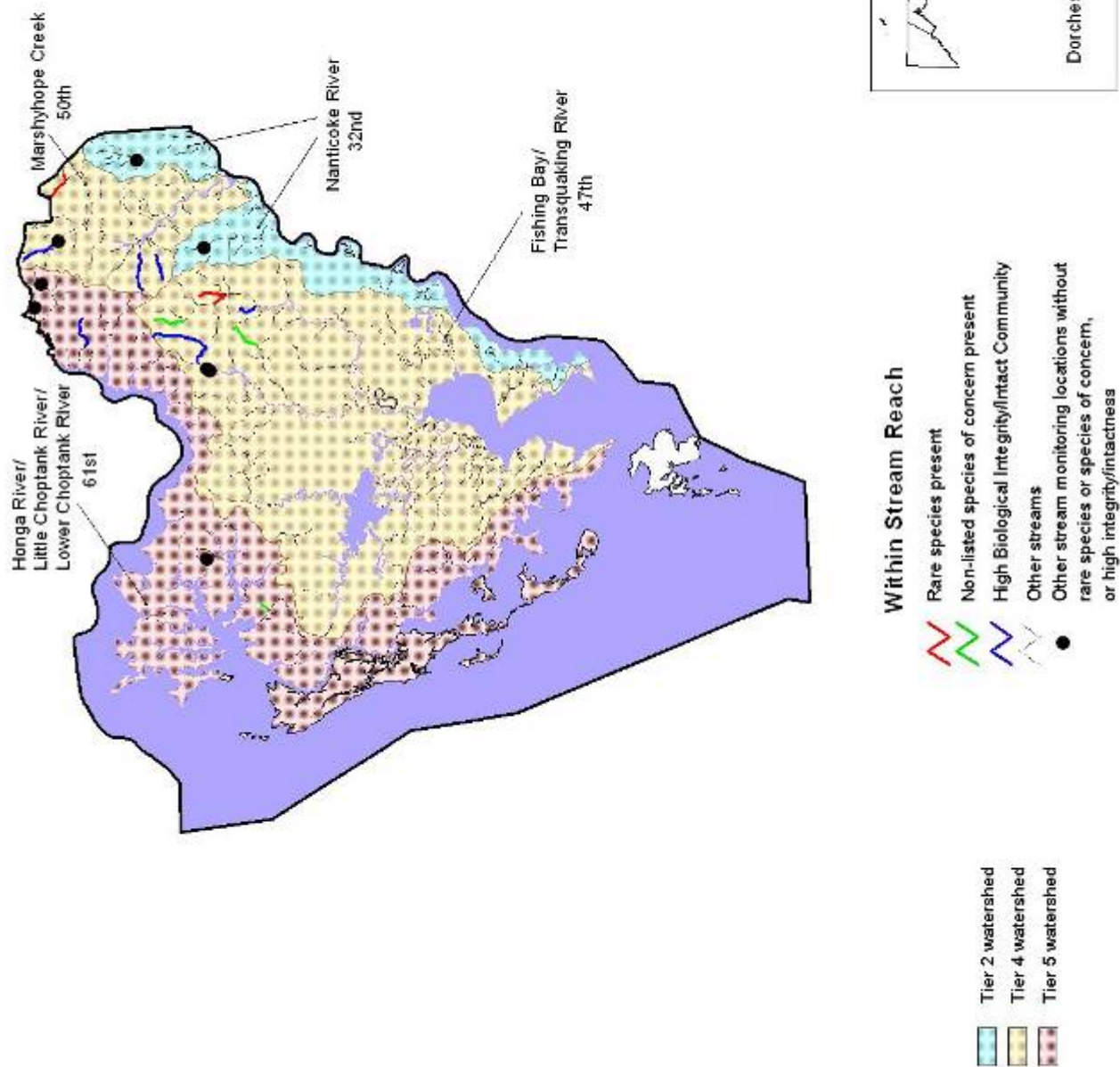


Figure 8-95. Aquatic Heritage Biodiversity Ranking map for Dorchester County, by watershed. Data from MBSS 1994-2004, MBSS qualitative data, Raesly, unpub. data, Harris 1975, Thompson 1984, and DNR Natural Heritage Program database.